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ABSTRACT

A cognitive training strategy was employed to investigate the nature of development in children's concepts of death. Subjects ranging in age from 3 to 11 years and attending Jewish-affiliated preschools participated in the study. Measures of verbal concept formation, abstract reasoning, general intelligence, and ability to conserve were administered to assess subjects' general level of cognitive functioning. As a pretest, children's responses to questions about death were elicited and their understanding of concepts of life was assessed. Subjects were then divided into experimental and "placebo" groups. Experimental groups were read a story and then were engaged in discussions about issues related to death. Taken from popular children's books, these stories were redesigned to induce conflict between preoperational and concrete operational views of death. The last story included more abstract notions, thus potentially promoting formal operational thought. The control group was involved in the same procedures as the experimental group, but in the control condition discussion themes did not focus on death. Within a week following the completion of interventions, all subjects were posttested, using pretest questions and the Concept of Life scale. A similar posttest was administered to all available subjects 25 to 30 weeks later. Results are discussed. (RH)

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Children's Concepts of Death:

A Cognitive Training Study‡

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Abstract

The current study sought to investigate the relationship between children's cognitive level, their experience (as induced by cognitive training), and their concepts of death. After assessing general level of cognitive functioning, children's responses to questions about death concepts (causality, cessation of bodily functioning, irreversibility, and universality) were scored with respect to the level of cognitive reasoning demonstrated. Subjects were then divided into experimental (cognitive training on death concepts) and placebo groups. Immediate and delayed post-tests followed the training. The results only partially replicated the findings of earlier investigators who described a direct connection between cognitive stage and the level at which concepts of death are comprehended. Thus, it was concluded that while cognitive stage is strongly related to the level at which children understand death concepts, it is clearly not a sufficient explanatory construct, and that variables such as experience must also be considered.

Evidence from clinical as well as empirical studies indicates that children's conceptions of death become more differentiated and realistic with age (e.g., Anthony, 1940, 1971; Nagy, 1948; Childers & Wimmer, 1971; Zeligs, 1974). However, within a given age range individual differences in comprehension of the concept have been noted (Nagy, 1948; Koocher, 1973; White Elson, & Prawat, 1978). Thus, although age is an important factor, it is certainly not the only one to be considered in assessing the development of death concepts.

Kastenbaum (1977) asserted that a child's interpretation of death is influenced by many factors that may be grouped as: (a) developmental level, (b) individual personality, (c) life experiences, and (d) communication and support. By far, the majority of empirical studies have focused on the first of these factors. The latter three are typically discussed from a more clinical standpoint, and the interaction of the factors is often ignored. Thus, the primary focus of this study is upon the interaction between developmental level, as measured by performance on Piagetian conservation tasks, and experience with the concept of death, introduced through a cognitive training intervention. The goal of such an intervention is to present the concept in a controlled setting as a means of facilitating (and perhaps simulating) the developmental process, thereby affording the experimenter an opportunity to isolate and observe the effects of specific variables (Baltes, Reese, & Nesselroade, 1977).

The Development of Children's Understanding of Death as a Function of Developmental Level

A number of studies have shown a progression in children's concepts of death which is associated with either chronological or mental age. Anthony (1940, 1971) was the first to propose an age-related classification schema which she based on children's definitions of the word "dead". Nagy (1948), while focusing on such issues as cessation of bodily functions and the irreversibility and universality of death, found that over time children's views of death become less egocentric and more realistic. She noted three modal categories of children's responses to death-related stimuli, which were thought to represent developmental stages.

Childers and Wimmer (1971) found significant relationships between chronological age and a child's understanding of the universality and irrevocability of death. Likewise was true for the concepts of irreversibility and the cessation of bodily functioning in a study conducted by Melear (1973).

A similar trend is seen throughout these early studies. The authors present models in which children's level of understanding of death is age-dependent, yet they offer no further insight as to factors that may account for the observed developmental changes. Thus, by itself the age variable is useful primarily as a descriptive rather than as an explanatory

construct.

In an attempt to address this issue, Koocher (1973, 1974) applied a Piagetian framework of cognitive development to the emergence of children's concepts of death. Thus, in regard to notions such as causality and irreversibility of death, it was found that preoperational children (so classified by their performance on conservation tasks) were essentially limited to egocentric and concrete explanations, while concrete operational children demonstrated far more realistic comprehension of death-related issues. Kane (1979) assessed a variety of death-related issues, noted they develop in clusters, and concluded that the concepts arise in stages that parallel those described by Piaget. She did not, however, directly test this relationship.

A number of other authors have also studied the development of children's concepts of death as it relates to level of cognitive development. White, Elson, and Prawat (1978) found that understanding of irreversibility, universality, and the cessation of bodily functioning was significantly related to cognitive level. These authors noted, however, that even within cognitive levels variations in comprehension were observed. They attributed this finding to potentially discrepant modes of concept acquisition, intimating that life experience seems to be a significant factor in shaping children's ideas. Weininger's (1979) results were similar to those of Koocher. He pointed out, however, that the findings become more ambiguous when children can express themselves through non-verbal modes (play) as well as through verbal ones. Lonetto (1980) gained comparable results in assessing children's views of death through drawings. He asserted that while age (or cognitive level) strongly affects children's representations of death, the contribution of individual experience cannot be ignored.

Children's Understanding of Death and Experience Factors

Clinical studies. The bulk of reports suggesting that experiential factors modify children's conceptions of death are clinical in nature. Through their work in applied settings, clinicians have made a wide range of observations and then subsequently subjected this data to theoretical interpretation (see for example, Yudkin, 1967; Rochlin, 1967; Zeligs, 1974).

Perhaps the most persuasive data demonstrating the impact of life experience on children's interpretations of death comes from studies of children who have cancer. Through her experiences with such populations, Bluebond-Langner (1978) described a five-stage model of change in self concept, asserting that as a child is exposed to requisite information related to death (for example, the death of another child), the child will integrate this knowledge to advance through the stages, constantly becoming more aware of the reality of impending death. Bluebond-Langner's work raises an interesting

issue. If these fatally ill children gain greater insights into death concepts as a result of their experiences, why is the same type of learning not available to normal children? While the impact may not be as great, it seems possible that through increased exposure, normal children could also become more advanced in their conceptions of death.

A partial answer to this question is provided by Sourkes (1980) who has worked with the siblings of children with life-threatening illnesses. She stated that the important aspect to be considered is not merely the experiences a child has had in relation to death, but the subjective meaning of the ordeal, and the manner in which the knowledge is subsequently applied. Furthermore, with greater identification with the dying person, children seem to gain more insight into death. Unfortunately, these notions have not yet been subjected to careful empirical validation.

Death education. Besides personal experience, it has been asserted that death education may serve as a valuable tool to promote understanding of death-related concepts (Kavanaugh, 1972; Mills, Riesler, Robinson, & Vernilye, 1976; Gordon & Klass, 1979). While many well-designed educational packages are available, there have been virtually no careful investigations to substantiate their effectiveness (Durlak, 1978).

In summary, those nonempirically-based writings that focus on children's concepts of death suggest that exposure to death concepts, either through personal life experiences or training, serves to facilitate greater comprehension of key issues. What is not clear at this point, however, is whether this understanding results from merely an elaboration of content knowledge (i.e., more detailed knowledge of concepts related to death) or from actual structural shifts. The latter implies greater interrelatedness between these attribute concepts which is deemed essential for a complete understanding of the overall concept of death. Training studies provide a way to explore further the nature of such concept development (Flavell, 1970).

Cognitive Training Studies

Although cognitive training studies have been used in a variety of contexts, including conservation (see Brainerd, 1977), social development (Marsh, Serafica, & Barenboim, 1980), and moral development (Schlieffer & Douglas, 1973; Tracy & Cross, 1973; Turiel, 1974), the basic paradigm is the same. Subjects are given a pretest to assess their level of functioning, and a post-test after the intervention is imposed in order to measure change. Experimental groups are compared with placebo or control groups in an attempt to isolate the specific aspects of the training that are responsible for the observed change.

Turiel (1969) discussed some very important aspects of training studies. First, he stated that these studies

consistently show that training is most effective when subjects are in transition between levels of cognitive development. The shift from one stage to the next is gradual, and therefore training acts as a catalyst to promote growth in those children who are approaching the dominance of the next stage. Furthermore, Turiel stressed that training is most successful when cognitive conflict is introduced. Merely presenting a child with new ideas will not necessarily facilitate thinking at the higher cognitive level. By inducing conflict, however, both levels of thinking are represented, and the child has the opportunity to observe the incongruity.

If in fact a cognitive shift has taken place as a result of the training, then the subject should be able to provide explanations that reflect comprehension of the material at the higher cognitive level. Secondly, the subject must refute countersuggestion, and be able to generalize to non-trained material. Finally, the effects of training should be maintained over a relatively long time span (Kuhn, 1974).

Thus, by employing the above methodological strategies for cognitive training, the current investigation sought to elucidate the nature of the development of death concepts in children.

Method

Subjects

56 male and 35 female subjects were drawn from Jewish-affiliated preschools in middle to upperclass neighborhoods of a large Midwestern city. Ages ranged from 3 years 1 month to 11 years 5 months, the mean age being 7 years 1 month. Only subjects receiving parental permission participated in the study. These ages were chosen for two reasons. First, previous findings show that children younger than about 3 or 4 years do not seem to possess a stable concept of death (Kastenbaum, 1974). Secondly, the current study focused on preoperational and concrete operational children which are cognitive levels typically found within this age range. Controls were instituted for the variable of religion since it is possible that it may influence the development of children's concepts of death (McIntire, Angle, & Struempler, 1972).

Procedure

Assessment of cognitive level. As a measure of verbal concept formation, abstract reasoning, and general intelligence, the Similarities and Vocabulary subtests of the Wechsler Scales were employed. Those subjects failing to achieve a scaled score of at least 9 (average range) on those subtests were eliminated from the study.

Each subject was tested for conservation in three modalities: substance, number (unprevoked correspondence), and continuous quantity (see Goldschmid, 1967; Goldschmid & Bentler, 1969). To eliminate those subjects who may have attained formal operations, the Archimedes Test of Floating Objects (Phillips, 1969) was used. Those subjects who failed all conservation tasks were classified as preoperational (N=25, Mean age=55.3 months, $S.D.$=8.30). Those who passed one or two of the three tasks were categorized as transitional between preoperational and concrete operational (N=20, Mean age=70.5 months, $S.D.$=20.32). Those subjects who demonstrated competence on all conservation tasks but failed the floating objects test were classified as concrete operational (N=46, Mean age=107.4 months, $S.D.$=19.47)

Pretest. For the purposes of later comparisons, subjects were assessed for their understanding of concepts of life (see Laurendeau & Pinard, 1962). Finally, each child was asked a series of questions regarding death, which the experimenter took care not to overemphasize. The general questions were: (a) What makes things die? (b) How can you tell something is dead? (c) How can you make dead things come back to life? (d) Do you think everybody will die someday? (e) Do you know someone who has died? Tell me about it. The first four of these questions aimed to measure the concepts of causality, cessation of bodily functioning, irreversibility, and universality, respectively. To insure that each child comprehended the entire issue, a series of probes accompanied each of these questions. The last question was included as a

means to facilitate the sharing of other ideas held regarding death as well as a general measure of the child's prior experiences.

Scoring. The scoring system designed for this study was directly related to a Piagetian framework of cognitive development such that responses to each of the above questions can be assigned a numerical ranking corresponding to the level of cognitive reasoning that is demonstrated. A score of "0" is assigned when there is a lack of awareness regarding the concept. This score includes fantastic and idiosyncratic notions that characterize the thinking of a preoperational-stage child. For example, "You can die if you've been very bad." A "1" is designated to those responses that reflect partial accuracy and/or completeness in comprehension of the concept, i.e., concepts that are more advanced than the irrational thought of preoperations, but not logical enough to represent concrete operations. For example, "If you are not careful, you can die." A score of "2" is given when the child demonstrates accurate and complete comprehension of the concept, limited, however to concrete explanations. For example, "You can die from diseases like cancer or a heart attack." Finally, a score of "3" is assigned when the response reflects not only accurate and complete comprehension of the concept, but also abstract insights and principled thought characteristic of formal operations. "Anything that can stop your body from working right," is an example of such a response.

Training. Immediately following the completion of pretesting, all subjects were randomly assigned to treatment groups. Each group contained 3 to 5 subjects who were all of the same or adjacent cognitive level. These groups were then divided such that half of the groups were exposed to experimental procedures, and half served as control groups. Both sexes and all three cognitive levels were represented equally in experimental and control treatments.

On each of four consecutive days, experimental groups were read a story and engaged in discussions about death-related issues. The stories were taken from popular children's books that have death as a main theme. The plots were made more concise and emphasis was placed on the four main death concepts. The first three stories were redesigned in order to induce conflict between preoperational and concrete operational views of death. The last story also included more abstract notions, thus potentially promoting thought on a formal operational level. At certain points throughout the stories, and at their completion, the experimenter facilitated discussion on each major issue.

In order to be confident that it was discussion about the concept of death that was the critical variable, and not simply group interaction in general, a control group of subjects was included. This group was subjected to the same procedures as was the experimental group, but the discussion themes did not focus on death.

Post-tests. Within one week following the completion of experimental and control interventions, all subjects were

given a post-test. The post-test included the same basic questions used previously as well as ample probes and countersuggestion to fulfill the criteria suggested by Kuhn (1974). The Concept of Life scale was also readministered to assess the generalizability of the training. A similar post-test was administered to all available subjects (74.7% of the original population) approximately 25-30 weeks later.

Reliability of scoring procedures. In all cases, the raters were blind to the treatment group of the subject. At least one-third of all protocols from initial pre- and post-testing sessions were scored by a second trained and independent rater. The results of this interrater reliability were satisfactory in that correlations for each of the concepts ranged from $r=.87$ to $r=.95$, all of which were significant, $p<.001$. Furthermore, data from the placebo group afforded information on test-retest reliability. Analyses yielded the following correlations: causality, $r=.81$, $p<.001$; cessation of bodily functioning, $r=.70$, $p<.001$; irreversibility, $r=.59$, $p<.001$; and universality, $r=.77$, $p<.001$.

Results

Since the variables that reflect children's concepts of death are ordinal in nature, frequency data and categorical analyses (including log-linear techniques) were employed, all of which yield Chi-square statistics. To avoid violating major statistical assumptions, some of the response categories were collapsed. Thus, while all frequency data will be reported accurately, some of the Chi-square statistics were computed with this slight modification. Furthermore, since there are no "repeated measures" designs in categorical analysis models, analyses of change over time necessitated the use of difference scores. Some collapsing of these scores was required as well. It is important to note that the aforementioned precaution consistently reduces differences between groups and therefore yields a more conservative measure of statistical significance.

Preliminary analyses showed no significant differences in concepts of death between male and female subjects. Therefore, all subsequent analyses were performed without controlling for the sex of the subject.

Pretest. Table 1 shows the frequency distribution for children's concepts of death as related to cognitive level. For the variable of causality, a significant developmental trend was observed, $\chi^2(4)=27.76$, $p<.001$. Further analyses revealed no significant differences between preoperational and transitional subjects. Concrete operational subjects demonstrated significantly greater understanding of causality than did trasitional subjects, $\chi^2(1)=6.34$, $p<.05$, and of course preoperational subjects, $\chi^2(2)=25.81$, $p<.001$. A similar significant trend was found for the variable of cessation of bodily functions, $\chi^2(4)=39.25$, $p<.001$. The differences between concrete operational and transitional subjects were significant, $\chi^2(2)=20.56$, $p<.001$, and between the former and preoperational subjects, $\chi^2(2)=32.89$, $p<.001$. For irreversibility a significant developmental trend was noted, $\chi^2(4)= 22.52$, $p<.001$. Further analyses revealed significant differences between concrete operational and transitional subjects, $\chi^2(1)=4.18$, $p<.05$, and between preoperational and concrete operational subjects, $\chi^2(2)=20.30$, $p<.001$. Finally, for universality another highly significant effect for cognitive level was observed, $\chi^2(4)=40.13$, $p<.001$. In this case however, there were significant differences between preoperational and transitional subjects, $\chi^2(2)=16.52$, $p<.001$, as well as between preoperational and concrete operational subjects, $\chi^2(2)=37.41$, $p<.001$.

As may be seen in Table 1, for the concept of life there was a significant developmental trend, $\chi^2(4)=38.00$, $p<.001$. As was often the case with the death concepts discussed above, the concrete operational subjects were significantly more advanced than were their transitional counterparts, $\chi^2(1)=12.57$, $p<.001$, and their preoperational counterparts, $\chi^2(2)=33.43$,

$p<.001$.

While the analyses discussed thus far clearly indicate a strong relationship between cognitive level and death concepts, the relationships among the concepts themselves must be examined. Table 2 shows the correlation matrices of the concepts, broken down by cognitive level. As can be seen, the least degree of internal consistency was found among concrete operational subjects, while transitional subjects demonstrated the highest correlations of the three groups. In a more clinical fashion, the responses of each child were reviewed in an attempt to recognize the emergence of any consistent developmental trends. Although in almost all cases the ratings of responses were within one level of each other, no noticeable patterns emerged to indicate specific relationships among the concepts.

Experimental Treatment Effects

Post-test. For the variables of causality and cessation of bodily functioning, significant main effects for treatment were observed, $\chi^2(1)=8.15$, $p<.05$, and $\chi^2(1)=8.26$, $p<.05$, respectively (Table 3 contains the relevant frequency data). Similar but insignificant trends were observed for the other two concepts. In nearly all cases where shifts were observed, they were to one level higher. In only one case did a subject attain a score of "3" (formal operations) as a result of training. Contrary to hypotheses, no significant interaction effects for training by cognitive level were observed for any of the concepts.

One possible effect of the training may have been to homogenize the levels at which experimental subjects comprehended death concepts. Correlation matrices did not demonstrate this effect, however. Furthermore, analyses of the concept of life variable failed to show significant shifts as a result of training, suggesting that training effects did not generalize.

Delayed post-test. Log-linear analyses comparing difference scores reflecting changes from both the pretest and the initial post-test revealed no significant main or interaction effects for cognitive level or treatment group. Inspection of the delayed post-test data showed attenuation of group differences resulting from (a) the reversion of some experimental subjects to their earlier level as well as from (b) some control subjects advancing a level. The majority of subjects, however, showed no changes from post-test to delayed post-test scores. Correlational data on delayed post-test responses showed no improvement in the internal consistency of the concepts except for control subjects in the preoperational group, for whom a number of significant relationships were observed.

Discussion

Data from the pretest portion of this study partially replicated and extended the findings of earlier researchers who found significant relationships between cognitive level and comprehension of death concepts (e.g., Koocher, 1973; White, Elson, & Prawat, 1978). In those studies, as well as the present one, the concept of death was broken down into composite notions, each of which was found to be more clearly understood by children as they mature cognitively. As expected, the majority of concrete operational subjects demonstrated complete and accurate comprehension of the concepts, while the overwhelming majority of preoperational children showed little or no insight into them. Transitional subjects were found to be distributed between these two extremes.

Before examining the specific effects of training, it is important to carefully consider the nature of concept development. In line with Flavell's (1970) model, we may consider death as a general concept with the component (attribute) concepts being causality, cessation of bodily functioning, irreversibility, and universality. To comprehend death completely, a child must understand all of the component concepts on a uniformly high level (thereby implying a conjunctive, if not some relational structural combination). Earlier studies typically focused only on the level at which children comprehended the component concepts, and virtually ignored the nature of the structural relationships between them, i.e., there are no data mentioned to show a specific structural relationship that emerges developmentally.

In viewing the pretest data, there was no evidence of developmental synchrony of the attribute concepts. Furthermore, the lack of internal consistency between attribute concepts implies that no uniform grouping or "structure d' ensemble" (Piaget, in Flavell, 1963) underlies these concepts. Thus, while previous authors (e.g., Kane, 1979) imply direct relationships (i.e., structural interrelatedness) among the attribute concepts, the present data do not support this notion.

It follows that cognitive training may have two possible effects. First, it may simply facilitate greater insight into one or more of the component concepts themselves. Secondly, training may actually change the structural relationship between the attributes, promoting increased interrelatedness. It was hypothesized that due to the conflict induced in the training, the latter would occur, especially for those subjects who were initially classified as transitional between preoperational and concrete operational thought.

Positive difference scores from pre- to post-test were deemed to represent greater insight into the component concepts themselves. Analyses of these data revealed that training did promote greater insights into the concepts of causality and cessation of bodily functions across all cognitive levels. However, neither correlational data (measuring internal

consistency) nor a more clinical review of the data yielded evidence of structural shifts (increased interrelatedness) for any of the cognitive levels. Furthermore, there was no evidence that the training generalized to the related concept of life, which would also be indicative of cognitive shifting.

Delayed post-test data suggested that while training was beneficial initially, its effects were not so dramatic in the long run. This does not imply necessarily that experimental effects were not lasting since in most cases they were. However, because some experimental subjects reverted to their pretraining conceptions, while some of the control subjects advanced in their views (independently of training), group differences failed to reach levels of significance.

In seeking to explain these findings, it seems natural to examine first the nature of the training itself. Preoperational and concrete operational views of death were introduced through the dialogue of two protagonists in each story. This procedure was employed so that the discrepant viewpoints would be juxtaposed, thereby making the conflict obvious. Since all subjects were actively engaged in the discussions that followed the stories the conflicts were enhanced. Presumably, this experience increased disequilibrium and therefore facilitated equilibration and structural advancement.

There were some factors that may have detracted from the full effect of the training experience. First, due to practical limitations, it was often impossible to arrange treatment groups that included mixtures of preoperational and concrete operational subjects. Such peer interaction would have likely enhanced other training effects. Second, the training session, four stories on each of four days, may have been either too brief or too concentrated. Finally, the stories hardly focused on formal operational views of death; this could have promoted further insights on the part of the more advanced subjects.

With these methodological limitations in mind, one may still examine the effects of cognitive training to gain theoretical insights. One goal of the training was to facilitate structural shifts in the relationship between attribute concepts. Although no such relationships were found, the training did in fact produce significant shifts in the level of understanding of two of the four death-related concepts across all cognitive levels. This may be due to a number of factors such as variation in the degree of difficulty of the concepts themselves, variance in the quality of the training for particular concepts, or heterogeneity in the subjects' prior experiences with certain concepts. According to Piaget (Flavell, 1963), it is just these sorts of factors that contribute to horizontal decalage. That is, although a child may be predominantly functioning in a particular stage, there are variations in the facility with which that child can grasp certain concepts.

Another reasonable explanation for the observed changes arises from Flavell and Wohlwill's (1969) distinction between

competency and performance. It is possible that the training did not alter the subjects' insights into the attributes or the cognitive structures relating them, but rather facilitated children's ability to verbalize their thoughts. In previous studies, both Weininger (1979) and Lonetto (1980) concluded that, particularly with young children, insights into the nature of death may be present but that the children cannot yet articulate them. Thus, rather than promoting specific insights and structural shifts, the training may have simply provided the children with a vehicle to express insights that were already there. This notion reemphasizes the point that there is no simple relationship between cognitive level and death concepts.

Finally, contrary to hypotheses, there were no treatment by cognitive level interaction effects. The implication is that the training did not have more impact on the transitional group than it did on the other two groups, which is a result often found in other cognitive training studies (see Turiel, 1969). In most of these studies, however, transitional subjects were so categorized based on their standing with respect to target variables; e.g., in studies in which conservation is being trained, transitional subjects are those who demonstrate competence for some conservation tasks but not others (Brainerd, 1977). In the current study this was not done. Subjects' cognitive level was defined in terms of performance on conservation tasks while the target variable was concepts of death. One to one correspondence between these two variables has never actually been demonstrated, in part because the developmental sequence for the concept of death has not been clearly delineated. Furthermore, while it seems that acquiring the concept of conservation should precede understanding the concept of death, data from the pretest portion of the study do not demonstate that this is necessarily so. Certainly further research that carefully examines the manner in which the attribute concepts arise and which delineates the specific relationship between these concepts and conservation would be most helpful.

Thus, it seems wise to view cognitive level as a general rather than an absolute guide to how children conceptualize death. Clearly such factors as the child's previous experience, the difficulty of the concept, and the possible structural relationship between the concepts themselves, as well as cognitive level, affect the manner in which death is viewed at a given age. Certainly, future research should more carefully assess the impact of these variables. Only then may we more completely comprehend the process by which children come to understand death, and only then can we more accurately simulate the process in cognitive intervention procedures.

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Table 1

Children's Concepts of Life and Death:

Frequencies and Percentages of Subjects by Cognitive Level

	Level of Response			
Cognitive Level	0	1	2	3
Causality				
Preoperational	10(40.0%)	14(56.0%)	1(4.0%)	0(0%)
Transitional	4(20.0%)	11(55.0%)	5(25.0%)	0(0%)
Concrete Operational	2(4.4%)	17(37.0%)	26(56.5%)	1(2.2%)
Cessation of Bodily Functions				
Preoperational	13(52.0%)	12(48.0%)	0(0%)	0(0%)
Transitional	7(35.0%)	12(60.0%)	1(5.0%)	0(0%)
Concrete Operational	1(2.2%)	22(47.8%)	23(50.0%)	0(0%)
Irreversibility				
Preoperational	12(48.0%)	8(32.0%)	5(20.0%)	0(0%)
Transitional	4(20.0%)	11(55.0%)	5(25.0%)	0(0%)
Concrete Operational	2(4.4%)	20(43.5%)	24(52.2%)	0(0%)
Universality				
Preoperational	12(48.0%)	13(52.0%)	0(0%)	0(0%)
Transitional	2(10.0%)	9(45.0%)	9(45.0%)	0(0%)
Concrete Operational	1(2.2%)	14(30.4%)	30(65.2%)	1(2.2%)
Concept of Life				
Preoperational	5(20.0%)	20(80.0%)	0(0%)	0(0%)
Transitional	2(10.0%)	14(70.0%)	4(20.0%)	0(0%)
Concrete Operational	0(0%)	15(32.6%)	30(65.2%)	1(2.2%)

Table 2

Correlation Matrix of Death Concepts
and Concept of Life by Cognitive Level

Concept	2	3	4	5
Preoperational				
1. Causality	.33	.23	.24	.22
2. Cessation		.66***	.44*	.48*
3. Irreversibility			.48*	.46*
4. Universality				.12
5. Life				
Transitional				
1. Causality	.58**	.55*	.30	.26
2. Cessation		.58**	.29	.43
3. Irreversibility			.53*	.54*
4. Universality				.18
5. Life				
Concrete Operational				
1. Causality	.30*	.16	.16	.20
2. Cessation		.17	.01	.29*
3. Irreversibility			.28	.13
4. Universality				.34*
5. Life				

Note. *p<.05 **p<.01 ***p<.001

Table 3

Difference Scores of Death Concepts

by Cognitive Level and Treatment Group

	Difference Score			
Group	-1	0	1	2
Causality				
Preoperational				
Experimental	0(0%)	6(50.0%)	5(41.7%)	1(2.3%)
Control	3(27.3%)	8(72.7%)	0(0%)	0(0%)
Transitional				
Experimental	1(10.0%)	5(50.0%)	4(40.0%)	0(0%)
Control	2(20.0%)	6(60.0%)	2(20.0%)	0(0%)
Concrete Operational				
Experimental	2(9.1%)	10(45.5%)	9(40.9%)	1(4.5%)
Control	0(0%)	19(86.4%)	3(13.6%)	0(0%)
Cessation of Bodily Functions				
Preoperational				
Experimental	0(0%)	5(41.7%)	6(50.0%)	1(8.3%)
Control	1(9.1%)	10(90.9%)	0(0%)	0(0%)
Transitional				
Experimental	0(0%)	4(40.0%)	5(50.0%)	1(10.0%)
Control	1(10.0%)	6(60.0%)	3(30.0%)	0(0%)
Concrete Operational				
Experimental	1(4.6%)	14(63.6%)	7(31.8%)	0(%)
Control	4(18.2%)	14(63.6%)	4(18.2%)	0(0%)